# Tornadic Squall Line Index

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Tornadoes generated from squall line or multiple cell thunderstorm clusters are common over extreme southeast Kansas and the Missouri Ozarks. These tornadoes are often difficult to warn on due to the shallow nature of squall line mesovortices, along with the rapid development of tornadogenesis once a mesovortex has been detected by radar. Therefore, from a radar perspective, recognizing mesovortices or tornadic vortex signatures associated with multiple cell thunderstorm clusters can be difficult, and sometimes nearly impossible when assessing velocity or storm relative velocity data from the WSR-88D.

The primary objective in developing the Tornadic Squall Line Index was to increase forecaster awareness of environments that create multiple cell thunderstorms that have a high frequency of tornadoes, both from a mesoanalysis and a longer term forecast perspective.

The Tornadic Squall Line Index has been developed from this research, and incorporated into AWIPS at the National Weather Service in Springfield, Missouri. The index has been monitored through several convective events over the past year, but also plugged into the Weather Event Simulator to analyze its performance during past events. One important conclusion from this research would suggest that similar environmental ingredients are needed for squall line tornadoes when comparing with supercell tornadoes. Other results would suggest that it's extremely important to have a low level convective available potential energy and shear combination present for squall line tornadoes.